Simple things YOU can do at home to conserve and protect water

Environmental and Public Protection Cabinet
Division of Water

kentuckyunbridledspirit.com

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CONSERVING AND PROTECTING WATER MEAN LESS TREATED SEWAGE IN STREAMS AND GREATER PROTECTION FOR GROUNDWATER RESOURCES. Cleaner water means better conditions for human health, for fish and wildlife, for better recreation for people and purer sources for drinking water.

Water is a natural resource that we too often take for granted. We turn on a faucet, and water gushes out. We wash our cars and irrigate our laws, and wedon't concern ourselves about where water comes from or how much we use. And we're never concerned that it might not be there.

We flush or pull a stopper or pour something down a drain, and wastewater disappears. Or we pour something on the ground or into a storm drain, and that's the end of it as far as we're concerned.

But water is a limited resource.

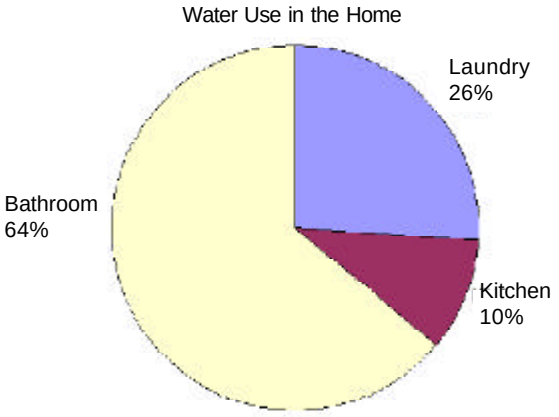
The same amount of water exists on earth today that existed in prehistoric times. The population in Kentucky, however, has doubled - from 2.15 million in 1900 to 4.04 million in 2000.

And each person uses more water per day now.

For instance, in 1900 the average water use per day was 5 gallons per person. Today, the average is 62 gallons per person per day!

The purpose of this booklet is to suggest ways to conserve water and to protect water from pollutants so there will be enough safe water for all of us.

WHERE DOES MOST WATER USE OCCUR?



In the bathroom - 64 percent:

• *33 percent is used for flushing the toilet*
Conventional toilet (manufactured before 1978) = 4 - 6 gallons per flush.
Water saving toilet = 3.5 gallons per flush.
Low-consumption toilet = 1.6 gallons per flush.
• *19.6 percent is used for bathing*
A five-minute shower will use the following:
Conventional shower head (3-10 gallons per minute) = 15-50 gallons.
An extra-long shower for Dad massaging a backache = 75-85 gallons.
Low-flow shower head (2-2.75 gallons per minute) = 10-13.75 gallons.
A full tub bath = 50-60 gallons.
One-quarter of a tub full = 12.5-15 gallons

• *11.3 percent goes down the bathroom sink as people brush their teeth, wash their hands, and shave*

17 handwashings = 4 gallons
4 face washings = 8 gallons
Dad shaving, water running at 3.5 gallons per minute = 7 gallons
8 tooth brushings, water running at 2 gallons per minute = 24 gallons

In the kitchen - 10 percent:

• *5.8 percent goes down the kitchen sink during food preparation and cleanup*

Cooking water for coffee and tea, washing vegetables, cooking pasta, etc. = 2.5 gallons
Two glasses of tap water a day average for four people = .625 gallons
Running the water until it's cold four times= 7 gallons.
Ice maker in refrigerator on a heavy-use day = 3 quarts
Dog dish = 1.5 quarts)

• *2.5 percent is used for automatic dishwashers*
• *1.8 percent is used for garbage disposals.*

In the laundry - 26 percent:

• One load = 40 gallons

Outdoors:

• *Washing the car with hose, water running at 5 gallons per minute = 125 gallons*
• *Sprinkling the lawn for two hours = 660 gallons*

Where does all the water go after it goes down the drain?

• 25 percent goes to septic systems and cesspools
• 74 percent goes to wastewater treatment plants
• 1 percent goes elsewhere

What happens to the sludge left over after wastewater is treated?

• 42.3 percent is dumped into landfills
• 21.4 percent is incinerated
• 15.7 percent is used to fertilize farms, parks, forests
• 9.1 percent is composted for use as a soil conditioner
• 6 percent is disposed of in other ways
• 5.5 percent is dumped at sea

CONSERVING WATER

HOW MUCH WATER DO YOU USE?

THE AVERAGE KENTUCKIAN USES 62 GALLONS OF WATER EACH DAY.

How does you water use compare?

If you live in an area served by a public water system and receive a bill for water use, review your water bills. Divide the water usage shown on the bill by the number of days in the billing period and also by the number of residents of your household. If your water is measured in cubic feet, convert to gallons by multiplying by 7.48. Now you have an average amount of water use per day for one person in the household.

Example:

Water use for month = 1042.78 cubic feet
Number of days in billing period = 30
1042.78/30 = 34.759
Number of people in household = 4
34.759/4 = 8.689
8.689 x 7.48 = 65 gallons per day per person

If you have a well or in some other way use water that is not metered, find the average amount used per person per day by determining the water use for each fixture.

For showers and faucets, use a container and watch to measure the amount of water used by the fixture in a minute. Water used per toilet flush can be approximated by measuring the volume of water inside the toilet tank (width x length x depth) and dividing by 231. (There are 231 cubic inches in a gallon of water.)

After determining the water use for each fixture, record the number of uses and length of time each fixture is used to determine the total daily water use.

Remember to estimate the amount used by clothes and dish washers. (A top-loading washer uses an average of 35-60 gallons per load. A front-loading washer uses 22-25 gallons per load. The average dishwasher uses 8-12 gallons per load. Check the manual that came with yours. Or call the manufacturer's representative for this information.)

Don't forget to count water used in gardening and washing the car. Add all this up and divide by the number of water users in the household for the average use per person.

Now you're ready to start thinking about savings. Read through the ideas in this booklet, then pay attention to your own water-use habits as you go through a day's activities.

INSIDE THE HOUSE

1 **Check for leaks.** Faucets and water-using appliances that leak are the biggest water wasters in the home. A faucet that drips at a rate of 100 drops a minute will waste 300 gallons of water in a month. A fast drip could waste about 600 gallons; a small stream, 2,000-2,700 gallons; and a large stream, 4,600.

Most faucet leaks are caused by worn-out washers, parts that are inexpensive to repair. In the majority of cases, the worn-out washers are easily replaced. However, if you aren't familiar with a particular faucet's operation, borrow a how-to plumbing book, or call your plumber.

A toilet that leaks for six months can waste 45,000 gallons of water! When a toilet leaks, water escapesfrom the tank and washes away into a sewer or septic tank. Toilets are notorious for "silent" leaks - ones you don't hear running.

To check for these "silent" leaks, put about a dozen drops of red food coloring (be sure not to use any type of dye) into the toilet tank. Wait 10 to 15 minutes. If no coloring shows up in the bowl, you have a leak-free toilet. But color in the bowl means you need to check the flushing mechanism.

Again, if you're familiar with the operation of the toilet, fixing it will be simple, If the flushing assembly needs to be replaced, consider getting a new, efficient model. Directions on the packages are easy to follow if you are a good household plumber. Otherwise, call a professional.

In the bathroom

Today, 75 percent of water use in the home takes place in the bathroom. Here are ways to use less water in the bathroom:

TOILETS: Almost half of all water used in homes is used to flush the toilet. A conventional toilet manufactured before 1978 uses from six to eight gallons per flush. To reduce the amount of water used with each flush:

2 **Create a "dam" inside the tank**. Cut the top off a plastic gallon jug. Put some clean, heavy stones in the bottom part of the jug and place it in the tank where it won't get in the way of the moving parts of the toilet. If you use a smaller plastic bottle, you may not need to cut the top off. Just fill the bottle with some water andstones and place it in the tank. Every time the toilet is flushed, you save the amount of water that remains in the jug or bottle.

Note: Don't use the once-popular brick to displace water in the toilet tank. It may deteriorate in the tank. Grit from the deterioration can accumulate around the lap valve and keep it from sealing properly, resulting in lots of water loss.

3 If it's agreeable to family members, **consider flushing less often** - after two or three uses, or when there is solid waste. Liquid waste generally is not a health hazard.

4 **Never use the toilet as an ash tray or "waste basket"** by flushing gum wrappers, paper towels, or other items.

5 **When you must install a new fixture, investigate new toilet systems.** Some use only a few quarts of water. Some, such as composting toilets, may use no water. Still other systems use "greywater" (water from the bathtub or washing machine) instead of using clean drinking water to flush.

SHOWERS: A five-minute shower under a conventional showerhead that will deliver from three to ten gallons of water per minute will consume 15-50 gallons of water.

Here are some ways to use less water in the shower:

6 **Take shorter showers** to save more water.

7 **Wet down; turn off the water; soap up; turn the water back on, and rinse off.** Especially consider turning off the water while shampooing your hair.

8 **Install flow-control inserts.** These are inexpensive and usually fairly simple to install. They may cut the flow to as little as 2.75 gallons a minute. However, in areas that have low water pressure, the results may not be as good.

9 **Install a low-flow showerhead.** Check the advertised flow rate of those you consider - the flow should be less than three gallons a minute if you want substantial savings. These shower heads often mix air with water to provide the pressure needed for satisfactory showering.

10 **As you run the hot water until it heats up enough for a shower, collect the water in a bucket for watering plants.**

BATHTUBS: How much water do you use when you bathe in the bathtub? To find out, use a gallon container to fill the bottom of the bathtub until the water is an inch deep. Now determine how may inches you generally use and multiply by the amount you discovered it takes to fill the tub to a one-inch depth. An inch generally equals about 4.5 gallons. A "normal " bath of about 5.5 inches would use 24.75 gallons.

To use less water in the tub:

11 **Don't spill water through the over-flow pipe**.

12 **Bathe with less water.**

13 **Make sure the stopper is water tight.**

14 **Put the stopper in the tub before you turn on the water.** As water heats up, it will mix with the colder water and warm it.

15 **Bathe small children together.**

16 **Switch to showering.**

THE BATHROOM SINK: Older faucets may run at a rate of four gallons per minute with the faucet wide open - more in an area of high water pressure. Even faucet aerators manufactured before 1978 may run at a rate of three to six gallons per minute.

Use less water in the bathroom and kitchen sinks by trying some of these inexpensive hints:

17 **When brushing your teeth**, fill a glass half way and use that water to wet your brush and rinse your mouth; don't let the water run.

18 **When shaving or washing hands**, fill the basin and dip the razor or hands as needed.

19 **Install a water-saving tap device:**
Flow restrictors - restrict the amount of water that flows.
Spray taps - spray the water like a miniature shower and make washing and rinsing operations handier and more efficient.
Aerators - mix air with water to reduce the flow.
Combined spray tap-aerators - combine both features.

In the Kitchen

For food preparation,

20 **Fill the sink or a container for washing, rinsing, or peeling vegetables.** Don't let the water run. Use the "greywater" for watering plants.

21 **Cook food in as little water as possible** to prevent wasting water and losing nutrients.

22 **Follow recipes carefully** and do not overcook or measure out more water than necessary.

23 **Select the proper size pans for cooking**. Large pans require more cooking water.

24 **Use tight-fitting lids on pans** to keep water from boiling away too fast.

25 **Save the water left after you cook egetables** to use for soups or cooking other raw vegetables. Refrigerate the leftover water and use within a few days.

26 **Thaw frozen food in the refrigerator** rather than under running water.

27 **For drinking water**, don't let the water run until it gets cold enough to drink. Instead, keep a bottle of drinking water in the refrigerator.

For washing dishes by hand:

28 **Fill the sink or a dishpan**. Fill a second basin or dishpan with rinse water. Don't let the water run continuously. Washing dishesby hand and letting water run can use from 8 to 20 gallons.

29 **Use "greywater" from washing and rinsing** around, but not directly on, outdoor plants, or use it for other cleaning jobs.

Washing dishes in a dishwasher:

30 **Rinse dishes in a stoppered sink or dishpan** and skip the presoak cycle. However, if you like the presoak cycle, don't waste water by rinsing in the sink first.

31 **Better yet, scrape the dishes and let the dishwasher do the rest.**

32 **Run the dishwasher only with a full load.** Dishwashers use 8 to 12 gallons of water per load, a savings over washing by hand, particularly for those who let the water run while doing dishes by hand.

33 **If you have a sink garbage disposal unit, use it sparingly.** Accumulate the waste and dispose of it all at once by flushing with cold water. Better yet, save scraps for composting (don't compost meat or dairy products).

In the Laundry

34 **Use water-saver settings** if available on the machine. That is, set the water level for the size of the wash load.

35 **Wash only with full loads.**

36 **Wash only when clothes are dirty, not just to remove wrinkles.**

37 **Use low-sudsing detergents**. They require less water for rinsing. (The amount of foam has no effect on cleaning power.)

38 **Hand wash several items at the same time.** Use the final rinse water from one group of items as the wash water for the next group.

39 **Before using a permanent press cycle, read the manufacturer's directions.** This cycle may fill the tub an extra time, possibly using up to 20 extra gallons. If so, use a different cycle.

40 **Turn off the water supply to the washer when it is not in use to guard against possible leaks**. Check the hoses and look for leaks periodically.

For Household Cleaning

41 **Clean up spills and remove spots as quickly as possible** to avoid having to mop floors or shampoo carpets too often.

42 **Vacuum rugs regularly to prevent the need for frequent shampooing.**

43 **Plan household cleaning chores so that water can be reused for certain activities**. For instance, clean lightly soiled surfaces first, then the dirtier area, using the same cleaning water. Doing several tasks at the same time can save water.

OUTSIDE THE HOUSE

For outdoor tasks:

44 **Use a broom rather than a hose and water for the driveway, patio, sidewalks, and garage floor.**

45 **If you wash your car, consider using a mild detergent and parking the car on the grass** so the water used will also water the grass. Use a bucket of water to wash the car, then rinse quickly with the hose.

46 **Take advantage of a soft summer rain to wash your car.** Use some soap and a sponge and lend nature a helping a hand.

47 **For a swimming pool, spa, or jacuzzi,** clean the filter and maintain properly to avoid having to replace water often.

48 **When the water must be replaced**, be aware that some pool water may be used to water lawns and plants.

49 **If the swimming pool, spa, or jacuzzi is outdoors**, cover it when not in use to prevent evaporation.

50 **Keep levels on swimming pools low enough to prevent splashing water out.**

Lawns and gardens:

50 **Choose plants that are native to the particular region where they will be planted** so that they will be adaptable to the amount of available water.

51 **Plan lawn, landscape, and garden to minimize water needs.**

52 **Group plants that need similar amounts of water.**

53 **Mulch plants and small trees to retain moisture in the soil for a longer time.**

54 **Pull weeds to eliminate competition for water.**

55 **When watering lawns and plants, remember the general rule: water slowly, deeply, and infrequently.**

56 **Most lawns do not need frequent watering.**
Water when: a soil sample from the root zone feels dry, many leaf blades are folded in half, there are signs of wilting, or footprints remain in the grass long after being made.

57 **Water during the early morning or evening hours when temperature and wind are lowest.**

58 **Don't water on windy days.**

59 **Use a soaker hose or trickle or drip irrigation system** or device to put water closer to the roots instead of spraying it into the air where it can be lost to evaporation.

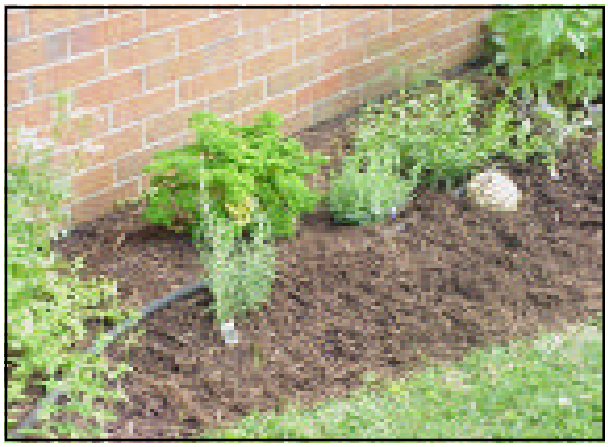
60 **If you use a sprinkler, choose one that sprays low and with large drops.**

Position it so that it waters the lawn, not the driveway or sidewalk.

61 **Raise the lawn mower blade**. Check with a lawn and garden center to find out the best height for your particular grass. Cutting the lawn higher encourages grass roots to grow deeper, shades the root system, and holds soil moisture better than does a closely clipped lawn.

62 **Mow the lawn often, and don't rake the clippings.** Frequent mowing will produce fewer, less dense clippings that will provide shade and mulch for roots, thus requiring less water.

63 **Avoid over-fertilizing the lawn.** Apply fertilizers that contain slow-release, waterinsoluble forms of nitrogen.



Drip irrigation hose used with mulched plants.

PROTECTING WATER FROM POLLUTANTS

EVERYTHING THAT GOES INTO THE AIR OR IS DEPOSITED IN OR ON THE EARTH WILL EVENTUALLY FIND ITS WAY INTO SURFACE AND/OR GROUNDWATER. To protect water from pollutants, first remember the three **Rs**: *reduce, reuse, recycle*.

Reduce the disposable materials you take into the home. Buy only the amount of a product needed, whether pesticide, paint, motor oil, transmission fluid, kerosene or other substance.

Use up all of the substance or give it away to someone who can use it. Give leftover paint to a local community or theater group, donate leftover pesticides to a garden club, etc. Be sure products are in their original containers with labels intact and use and disposal instructions are included.

To further reduce substances that must later be disposed of, *reuse* "greywater." "Greywater" is water that has been used to wash dishes or clothes. It can be reused for other cleaning tasks. Bath water may be used to water outdoor plants as well.

Recycle used oil and kerosene by taking them to an automotive service center, oil recycling station or authorized collection site. Do the same with your old car battery.

DISPOSE OF HOUSEHOLD HAZARDOUS WASTES IN AN ACCEPTABLE FASHION

SOME "DO NOTs" TO OBSERVE WHEN DISPOSING OF HOUSEHOLD HAZARDOUS WASTES

DO NOT dispose of any materials by pouring them onto the ground or into a storm sewer.

DO NOT dispose of any material in dumps by the side of the road.

DO NOT remove product labels.

DO NOT bury any containers - empty or full - in your yard.

DO NOT refill empty containers.

DISPOSING OF LEFTOVER MEDICINES

DO NOT dispose of unused medicines by pouring them down the drain or flushing them down the toilet. Instead, wrap them and put them into the garbage.

SOME ALTERNATIVE SOLUTIONS TO HAZARDOUS HOUSEHOLD PRODUCTS

One way to reduce the use of household hazardous waste is to use alternative solutions. Many environmentallysafe substances exist to do a job just as well as commercial products that produce possibly harmful side effects. Here is a list of some possibilities:

Inside the house

Pest control

Ants. Use red chili powder at point of entry into house.

House plant insecticide. Spray soapy water on leaves and then rinse. (This works for outdoor plants too. Be sure you use *soap*, **not** detergent.)

For roach control. Use boric acid (sold as a powder) or chopped bay leaves and cucumber skins. A 50-50 mix of boric acid and brown sugar in a dish may also be effective.

Or make a "bug ball" with the following: Combine 1/4 cup shortening (or bacon dripping) and 1/8 cup sugar until it's creamy. In a second container, mix 8 ounces of powdered boric acid and 1/2 cup flour. Then add the flour mixture to the sugar dough and combine well, adding just enough water to make the dough soft. Roll the dough into balls and place each one in a small open plastic bag. Place the bags under the sink, dishwasher, refrigerator, etc. When the dough becomes hard, mix a new batch.

Caution: Boric acid can be poisonous, so keep these mixtures away from children and pets.

Mothballs. Use cedar chests or place cedar chips in drawers or around clothes. Make lavender sachets for drawers and closets.

Cleaners

Brass cleaner. Worcestershire sauce or vinegar and water.

Chlorine bleach. Substitute baking (or washing) soda and water, Borax or natural sunlight (hang clothes outside on a line to dry to take advantage of this free, natural bleaching agent).

Creamy soft scrubber. Combine 1/2 cup baking soda in a bowl with vegetable-oil-based liquid soap, stirring into a creamy paste. Scoop onto a sponge and wash desired surface. Rinse thoroughly. If a disinfectant is desired, add borax; for heavy washing jobs, add washing soda.

Copper cleaner. Lemon juice and salt.

Drain cleaners. Use borax followed by boiling or very hot water. Or use baking soda followed by vinegar. Then pour boiling water down the drain. Use a plunger or a plumber's "snake" for clogged drains.

Fabric spot remover. Immediately soak in water, lemon juice, club soda or corn meal and water.

Furniture polish. Make a nontoxic polish by melting 1 tablespoon Carnauba Wax into 2 cups of mineral oil. For lemon oil polish, dissolve 1 teaspoon lemon oil into 1 pint of mineral oil. Or mix olive oil and lemon juice into a pint of water. Spray or wipe on furniture and polish with a clean cloth. This mixture works exceptionally well to

repair water rings left on furniture tops.

General household cleaners. Use an oil soap for floors (rinse well to prevent slippery surfaces) and woodwork. Add a couple of tablespoons of borax and of vinegar. Clean bathroom fixtures with soda mixed with a mild detergent and a small amount of bleach if absolutely necessary.

Laundry and dishwashing detergents . Use phosphate-free products. Excess phosphates in streams and lakes accelerate floating algae growth, blocking sunlight and depleting oxygen needed by aquatic animals and plants.

Oven cleaners. Scour with baking soda. For baked-on grease, heat oven to 200 degrees, turn off, and leave a dish with 1/4 cup of ammonia in the oven for several hours to loosen soil. Then scrub with baking soda. Save the ammonia to be used again.

Silver cleaner. Soak silver in 1 quart of very warm water with 1 teaspoon baking soda, 1 teaspoon salt, and a small piece of aluminum foil.

Toilet bowl cleaner. Make a paste of borax and lemon juice, or just borax, left in toilet overnight and wiped out in the morning.

Tub and tile cleaner. Combine 1/2 cup baking soda, 1 cup white vinegar and warm water.

Window cleaner. Fill a pump sprayer with a solution of 1 teaspoon liquid soap and 3 tablespoons vinegar in 2 cups of water. Or rub newspaper on the glass.

Outside the house

Pest control

Plant pest-resistant flowers, plants and vegetables whenever possible.

To stop cut worms from damaging tomatoes, make cardboard collars from cereal or cracker boxes. Collars should be 1-1/2" wide by about 10" long; wrap the collar around the base of the plant, staple, and seat it down approximately 1/2" to 3/4" below ground level.

Plant herbs and flowers that discourage pests; for example, marigolds help control tomato pests.

Encourage ladybugs, praying mantises, and other insects that eat garden pests.

Other outdoor activities

Deicing in winter - Use sand or kitty litter instead of salt.

Fertilizers - Start a compost pile using yard clippings and kitchen wastes (from fruit and vegetable preparation, as well as coffee grounds and filters). Dig compost into soil and/or use it as mulch.

Herbicides - Mulch planting areas or pull weeds by hand. Cover area with black plastic to prevent weed germination.

Workshop or house upkeep

Paints and solvents - Use water-based (latex, acrylic) paint whenever possible.

Paint remover/stripper - Use heat guns for removing many paints, but only in well-ventilated areas. Do not use on lead-based paints.

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http://www.water.ky.gov/